

REMARKS/ARGUMENTS

Claims 15 to 17, 23, 24, 29, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,288,298 to Aston in view of U.S. Patent No. 6,352,579 to Hirata et al. Claim 25 was rejected under 35 U.S.C. 103(a) as being unpatentable over Aston and Hirata et al. as applied to claims 15 to 17, 23, 24, 29, and 30 and, further in view of International Publication No. WO 96/19279 to Krogmann. Claim 27 was rejected under 35 U.S.C. 103(a) as being unpatentable over Aston and Hirata et al. as applied to claims 15 to 17, 23, 24, 29, and 30 and, further in view of U.S. Patent Application Publication No. 2003/0177909 to Koslow.

Claims 18 to 22, and 26 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form.

Reconsideration of the application is respectfully requested.

35 U.S.C. 103(a) Rejections:

A. Aston in view of Hirata et al.

Claims 15 to 17, 23, 24, 29, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,288,298 to Aston in view of U.S. Patent No. 6,352,579 to Hirata et al.

Aston discloses an antimicrobial air filter and method of making same. The filter in Aston comprises a layer of fabric that bears porous activated carbon particulate deodorizing agents and a layer of polymeric expanded foam filter media impregnated with a biostat type antimicrobial agent. See Aston, column 2, lines 32-36. The fabric layer is separated from the foam layer such that the antimicrobial agent is substantially prevented from contacting the porous activated carbon particulate deodorizing agents and clogging their pores. See Aston, column 2, lines 36-40. This separation may be provided by means of another layer of the foam that is not

treated with the antimicrobial agent, by a screen, or by an air gap. See Aston, column 2, lines 40-42.

Hirata discloses a chemical filter unit and gas purification system. The chemical filter unit of Hirata comprises a filter medium formed by laminating a plurality of fiber sheets and a housing for containing the filter medium, that has a gas inlet open on one face of the housing and a gas outlet open on the other face substantially opposite to the gas inlet, characterized in that gas passages to allow the flow of the gas along the surfaces of the fiber sheets are formed between the respectively adjacent fiber sheets of the filter medium from the gas inlet to the gas outlet. See Hirata, Col 2, lines 63-67 through Col. 3, lines 1-4.

Claim 15 of the present invention recites a cassette filter for filtering a medium, comprising: a frame; a pleated filter material disposed in the frame and having a first flow resistance; and a protective grid having passage holes disposed in the frame at a distance from the filter material and having a second flow resistance lower than the first flow resistance, the protective grid including: a first film strip extending parallel to a flow direction of the medium and bent around the passage holes and including a plurality of contact points; and a second film strip bent identically as the first film strip and recurrently contacting the first film strip at the plurality of contact points and being glued to the first film strip outside of the passage holes.

As admitted in the Final Office Action, "Aston does not disclose any protective grid disposed in the frame." See Final Office Action, page 3, paragraph 3 at lines 9 and 10.

The Final Office Action states that "since the filter unit of Hirata et al. has a resilient structure, as disclosed in column 3 lines 48-50, it inherently acts as a protective grid in combination with filter of Aston." See Final Office Action, page 4, lines 1 to 3. It is respectfully submitted that immediately following the text of Hirata as cited by the Examiner, Hirata discloses: "[t]hat the filter medium is immobilized substantially only by the resiliency of the plurality of the fiber sheets means that when the filter unit is used, the means for laminating the fiber sheets and immobilizing the filter medium in the housing do not evolve any gas to decrease

the effect of gas cleaning.” See Hirata at col. 3, lines 51 to 56 (emphasis added). Hirata then warns that: “if the fiber sheets are laminated using an adhesive or supported in their form by any other organic material or if the filter medium is immobilized in the housing using an adhesive, then any gas to decrease the effect of air cleaning may be evolved.” See Hirata at col. 3, lines 56 to 60 (emphasis added). Thus, Hirata warns against the use of an adhesive or other means to immobilize the filter into the housing. Hirata teaches away from the use of glue or adhesive to laminate the fiber sheets or immobilize the filter medium in the housing and, therefore, Hirata does not show a protective grid wherein “a second film strip bent identically as the first film strip and recurrently contacting the first film strip at the plurality of contact points and being glued to the first film strip outside of the passage holes” as recited in claim 15 of the present invention. Further, the structure of Hirata is a filter itself and there is no suggestion or disclosure that the chemical filter of Hirata may itself be used as a protective grid given the resiliency of the plurality of the fiber sheets.

In view of the above, it is respectfully submitted that Hirata does not disclose or suggest “a protective grid having passage holes disposed in the frame at a distance from the filter material and having a second flow resistance lower than the first flow resistance, the protective grid including: a first film strip extending parallel to a flow direction of the medium and bent around the passage holes and including a plurality of contact points; and a second film strip bent identically as the first film strip and recurrently contacting the first film strip at the plurality of contact points and being glued to the first film strip outside of the passage holes” as recited in claim 15 of the present invention. As Hirata fails to disclose a protective grid including a first and second film strip and since there is no suggestion or disclosure that the chemical filter of Hirata may itself be used as a protective grid, Hirata does not cure the defect of Aston even if the filter of Hirata was combined with the filter disclose in Aston as suggested by the Examiner.

Moreover, it is respectfully submitted that one of skill in the art would not have combined the chemical filter of Hirata with the antimicrobial air filter of Aston. The Examiner suggests that you would combine the filters of both Alston and Hirata together, however, one of skill in the art would not look to combine an intricate chemical filter unit intended for use in a stringently

controlled environment such “a clean room, clean booth or clean bench, etc.” as disclosed in Hirata with an air filter that is intended to be used in conventional “central air conditioning and heating systems of office and residential buildings” as disclosed in Alston. See Hirata at col. 1, lines 7 to 13; see Alston at col. 1, lines 6 to 9.

Furthermore, there is no rationale provided by the Examiner, Alston or Hirata as to why one would provide the clean room filter disclosed in Hirata disposed in a frame at a distance from the central air conditioning/heating system filter disclosed in Alston. Therefore, the combination of Alston and Hirata does not provide for “a protective grid having passage holes disposed in the frame at a distance from the filter material and having a second flow resistance lower than the first flow resistance” as recited in claim 15 of the present invention.

Withdrawal of the rejection to claim 15 under 35 U.S.C. § 103 (a) is respectfully requested. With respect to the dependent claims, withdrawal of the rejections under 35 U.S.C. § 103 (a) is respectfully requested in view of the above.

B. Aston and Hirata et al., further in view of Krogmann

Claim 25 was rejected under 35 U.S.C. 103(a) as being unpatentable over Aston and Hirata et al. as applied to claims 15-17, 23, 24, 29, and 30 and, further in view of International Publication No. WO 96/19279 to Krogmann.

Aston and Hirata et al. are discussed above. Krogmann discloses a filter pack that has a filter material folded in a zigzag pattern, wherein peaks of the folds on the side of the dust-laden gas define a dust-laden gas side and peaks on the side of the purified gas define a purified-gas side. See Krogmann, Abstract. Directly in front of the dust-laden gas side (4) and directly behind the purified gas side (6) is a wide-meshed, flexible screen (13) consisting of longitudinal threads (15) and transverse threads (17) spaced apart in a cover layer. See Krogmann, Abstract.

Claim 25 depends from claim 15 and recites “wherein the pleated filter material includes a plurality of partings and further comprising spacer strips supporting the protective grid and glued

to the partings.”

For the same reasons that independent parent claim 15 is patentable over Aston and Hirata et al., as discussed above, dependent claim 25 is not rendered obvious by Aston and Hirata et al. As noted above, both Aston and Hirata et al. fail to disclose or suggest a protective grid as recited in claim 15 of the present invention. Krogmann also fails to cure this defect of both Aston and Hirata et al.

There is also no teaching or disclosure to combine the gas filter of Krogmann with the chemical filter of Hirata or the air filter of Aston. In addition, although Krogmann discloses that “directly in front of the dust-laden gas side (4) and directly behind the purified gas side (6) is a wide-meshed, flexible screen (13) consisting of longitudinal threads (15) and transverse threads (17) spaced apart in a cover layer.” See Abstract of Krogmann. Krogmann does not disclose that “the pleated filter material includes a plurality of partings and further comprising spacer strips supporting the protective grid and glued to the partings” as recited in claim 25 of the present invention

Withdrawal of the rejection to claims 25 under 35 U.S.C. §103(a) is respectfully requested.

C. Aston and Hirata et al., further in view of Koslow

Claim 27 was rejected under 35 U.S.C. 103(a) as being unpatentable over Aston and Hirata et al. as applied to claims 15-17, 23, 24, 29, and 30 and, further in view of U.S. Patent Application Publication No. 2003/0177909 to Koslow.

Aston and Hirata et al. are discussed above. Koslow discloses an air filter medium comprising nanofibers, the filter medium having a thickness of less than 0.25 millimeters, a Figure of Merit greater than about 0.075, and an efficiency of greater than about 99.9% when capturing aerosol particles of about 0.18 microns in size and a pressure drop of less than about 40 millimeters water column at a flow rate of about 32 liters/minute through a sample 100cm² in

size. See Koslow, paragraph [0002].

Claim 27 depends from claim 15 and recites “wherein the filter material includes one of paper and a nonwoven material.”

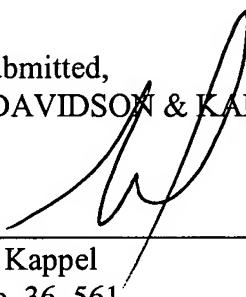
For the same reasons that independent parent claim 15 is patentable over Aston and Hirata et al., as discussed above, dependent claim 27 is not rendered obvious by Aston and Hirata et al. As noted above, both Aston and Hirata et al. fail to disclose or suggest a protective grid as recited in claim 15 of the present invention. In addition, Koslow fails to cure this defect of both Aston and Hirata et al.

Withdrawal of the rejection to claims 27 under 35 U.S.C. §103(a) is respectfully requested.

CONCLUSION

The present application is respectfully submitted as being in condition for allowance and applicants respectfully request such action.

Respectfully submitted,
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